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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,450	10/23/2003	Ajay Kapur	RD28357-1/YOD (GERD:0220)	8030
41838 7590 12/02/2008 GENERAL ELECTRIC COMPANY (PCPI) C/O FLETCHER YODER P. O. BOX 692289 HOUSTON, TX 77269-2289				
EXAMINER				
WANG, CLAIRE X				
ART UNIT		PAPER NUMBER		
2624				
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12/02/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/692,450

**Applicant(s)**

KAPUR ET AL.

**Examiner**

CLAIRE WANG

**Art Unit**

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9/9/2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-16 and 20-26 is/are rejected.  
7) ☒ Claim(s) 17-19 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/CD/CD)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. Applicants' response to the last Office Action, filed on September 9<sup>th</sup>, 2008 has been entered and made of record.

***Response to Arguments***

2. Applicant's arguments, filed September 9<sup>th</sup>, 2008, with respect to the rejection(s) of claim(s) September 9<sup>th</sup>, 2008 have been fully considered and are persuasive. Therefore, the Final rejection has been withdrawn.

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-7 and 12-23 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent<sup>1</sup> and recent Federal Circuit decisions<sup>2</sup> indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

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<sup>1</sup> *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

<sup>2</sup> *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 6 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Burke et al. (US 6,421,454, B1 hereinafter "Burke").

As to claim 1, Burke teaches a method for viewing an abnormality in different kinds of images (optical correlator assisted detection for breast biopsy; Title), said method comprising: scanning an object using a first imaging system to obtain at least a first image of the object (a film scanner scans in the radiographic image into the system and registers by a coarse registration step; Col. 15, lines 7-22); determining coordinates of a region of interest (ROI) visible on the first image (a ROI can be identified by a computer aided diagnosis system; Col. 15, lines 31-32 since the ROI is identified by a computer then the coordinate must be determined), wherein the ROI includes the abnormality (system for breast biopsy; Title); and using the coordinates of the ROI to scan the object with a second imaging system (the ROI of the breast is then scanned by the ultrasonographic equipment at a high resolution setting; Col. 15, lines 42-45).

As to claim 2, Burke teaches wherein determining coordinates of the ROI visible on the first image comprises manually marking the ROI on a display device that displays the first image (the ROI is marked either manually by an operator input or by a computer aided diagnosis system; Col. 15, lines 23-35).

As to claim 3, Burke teaches wherein determining coordinates of the ROI visible on the first image comprises automatically marking the ROI by using a computer-aided design (CAD) algorithm (the ROI is marked either manually by an operator input or by a computer aided diagnosis system; Col. 15, lines 23-35).

As to claim 6, Burke teaches registering 2-dimensional (2D) data from which the first image is generated with 3-dimensional (3D) data obtained by scanning the object with the second imaging system (develop and store 3D image data set after scanning with ultrasound in higher resolution; 240 and 242 Figs. 9a-9b).

As to claims 8-10, they are the same as claims 1-3. The only difference is that Claims 8-10 are system claim, whereas claims 1-3 are method claims. Therefore, claims 8-10 are analyzed in the same way as claims 1-3. Please see above for details.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4-5, 11-15, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke in view of Wang et al. (US 2003/0007598 A1 hereinafter "Wang").

As to claim 4, Burke teaches an ultrasound system wherein a probe is used (scan head probe; Col. 7, lines 9-15) and scanning the specific region of the object with the second imaging system to obtain at least one second image (the ROI of the breast is then scanned by the ultrasonographic equipment at a high resolution setting; Col. 15, lines 42-45). Wang teaches a breast cancer screening with adjunctive ultrasound mammography (Title) wherein a mechanical translation mechanism moves the ultrasound probe across the breast as ultrasound scans are taken ([0030], lines 7-9). Thus, Wang reads on the claimed instructing a probe mover to move a probe to the co-ordinates to scan a specific region of the object. Therefore, it would have been obvious for one ordinarily skilled in the art at the time the invention was made to combine Burke's ultrasound system with the mechanical probe mover in order to accurately move the ultrasound probe to the desired location.

As to claim 5, Wang teaches displaying the first and the second images concurrently to enable a user to view the abnormality (the ultrasound display has one or more adjunct display monitors positioned near the x-ray mammogram display so the radiologist is able to view both at the same time; [0033], lines 7-13).

As to claim 11, it is the system claim of claim 4. Therefore, it is analyzed in the same way. Please see above for detail analysis.

As to claim 12, it differs from claim 1 in that claim 12 further teaches registering 3-dimensional (3D) data relative to 2-dimensional (2D) data, wherein the 3D data is obtained using the second imaging system and the 2D data is obtained using the first imaging system. Wang teaches scanning the ROI using both X-ray and ultrasound wherein the X-ray is the 2D data generator and the ultrasound is the 3D image generator ([0044], lines 1-8). Thus, Wang reads on the claimed registering 3D image data with the second system and the 2D image data with the first system. Therefore, it would have been obvious for one ordinarily skilled in the art at the time the invention was made to combine the 2 system of Burke with the 2D and 3D systems of Wang, Since it's well known in the art that X-ray is capable of generating 2D images and ultrasound is capable of generating 3D images.



As to claim 13, Wang teaches wherein registering 3D data relative to 2D data comprises registering 3D data relative to 2D data without using fiducial marks on a patient having the abnormality (correlating the ROI using nipple distance information; [0044], lines 10-19).

As to claim 14, Wang teaches wherein registering 3D data relative to 2D data comprises registering 3D data acquired using an ultrasound imaging system relative to 2D data acquired using an X-ray imaging system (Wang teaches scanning the ROI using both X-ray and ultrasound wherein the X-ray is the 2D data generator and the ultrasound is the 3D image generator; [0044], lines 1-8).

As to claim 15, Wang teaches establishing a relationship between the 3D data acquired using the ultrasound imaging system and the 2D data acquired using the X-ray imaging system (Wang teaches scanning the ROI using both X-ray and ultrasound wherein the X-ray is the 2D data generator and the ultrasound is the 3D image generator; [0044], lines 1-8).

As to claim 21, it is the combination of claims 1 and 4. Thus it is analyzed in the same way. Please see above for detail analysis.

As to claim 22, it is the same as claim 2. Therefore, claim 22 is analyzed in the same way as claim 2.

As to claim 23, it is the same as claim 3. Therefore, claim 23 is analyzed in the same way as claim 3.

As to claim 24, it is the same as claim 21. The only difference is that Claim 24 is a system claim, whereas claim 21 is a method claim. Therefore, claim 24 is analyzed in the same way as claim 21.

As to claim 25, it is the same as claim 21. The only difference between the two claims is claim 25 fails to teach the scanning and determining coordinates part of claim 21. Also, claim 25 is a system whereas claim 21 is a method.

9. Claims 7, 16, 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke in view of Fu et al. (US 2005/0047544 A1 hereinafter "Fu").

As to claim 7, Fu teaches the differences in the position and orientation of the anatomical target images within radiographs correspond to the difference in the 3D position with in a target 3D coordinate frame are solved by finding the parameters (s, y, z, r, p, w). Thus Fu's parameters read on the claimed 6 unknowns. Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to combine Burke's radiographic and ultrasound system with Fu's correlation parameters in order to have a precise and rapid way to register 2D images with 3D scan data (Fu [0009] lines 1-3).

As to claim 16, it is the same as claim 7. The only difference between the two claims is claim 16 further teaches that 2D data is gathered using an X-ray and the 3D data is gathered using an ultrasound (Burke teaches develop and store 3D image data set after scanning with ultrasound in higher resolution; 240 and 242 Figs. 9a-9b). Therefore, claim 16 is analyzed in the same way as claim 7.

As to claim 20, Fu teaches obtaining six additional equations having six additional unknowns, wherein each of the six additional equations establishes a relationship between coordinates of 2D data acquired from the X-ray imaging system and coordinates of 3D data acquired from the ultrasound imaging system; solving the six additional equations to obtain the six additional unknowns; and averaging a first unknown of the six unknowns with a corresponding first additional unknown of the six additional unknowns (Fig. 3 shows the different ways of finding an relating the 6 unknowns through multi-dimensional matching).

As to claim 26, it is the system claim of 7. Therefore, claim 26 is analyzed in the same way as claim 7.

***Allowable Subject Matter***

10. Claims 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 17, the innovation distinction that makes the claim allowable is the three equations defined by the claim.

***Contact Information***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE WANG whose telephone number is (571)270-1051. The examiner can normally be reached on M-F 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Claire Wang  
11/23/2008